Intergenerational Comparison of Food Parenting of Home Eating Behaviors of Schoolchildren

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ABSTRACT

Objective: To explore intergenerational differences on key factors of food parenting practices (FPPs) related to home eating behavior of schoolchildren.

Design: In-depth interviews with social recognition theory-based semistructured interviews conducted from December 2016 to January 2017.

Participants: Primary caregivers of elementary schoolchildren from 23 households (16 parents, 14 grandparents) in 4 remote areas of Hualien, Taiwan.

Phenomenon of Interest: Factors related to FPPs hindering micronutrient-dense food group consumption by schoolchildren in a remote area.

Setting: In-depth interviews were conducted at participants' houses.

Analysis: Interviews were audiorecorded and transcribed verbatim. Inductive thematic analysis was performed to elicit studied phenomenon.

Results: Routine family meals provided adequate staple, protein, and vegetables but inadequate whole grains, dairy, fruits, and nuts. More parents provided breakfast composed of pan-fried and semiprocessed products made of refined flour and sugary beverages. Both parents and grandparents had ambiguous nutrition concepts and inconsistent FPPs but in different aspects. They both reflected expectations for assistance from local schools for nutrition and FPPs education to shape up healthy eating behavior of children.

Conclusions and Implications: Study findings pinpoint the strength and barriers of FPPs for primary caregivers. Implementing integrated nutrition education programs tailored for empowering nutrition literacy and FPPs is suggested to enhance the healthy eating behavior of schoolchildren in a remote area.

Key Words: schoolchildren, remote area, intergenerational parenting, qualitative study, food parenting practices (*J Nutr Educ Behav.* 2021;53:130–141)

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INTRODUCTION

To ensure that schoolchildren meet the Dietary Reference Intakes (DRIs) for energy and nutrients of growth and development, parents and caregivers are advised, on the basis of the Taiwan Daily Food Guide for Schoolchildren,^{1,2} to provide their children adequate servings of 6 groups of food

consisting of staple foods with whole grains, protein (from legumes, fish, eggs, meat), vegetables, fruits, dairy products, and fats (from oils, nuts, seeds). The results of the Nutrition and Health Survey in Taiwan of 2013–2016 (NAHSIT 2013–2016) showed that children aged 7–12 years (first to sixth grade) consumed, on average, adequate total calories and

servings of staple food, protein sources, and fat/oil. However, underconsumption was identified as follows (recommendation noted in parentheses): 1.7 servings of vegetables (3–5 servings), 0.8 serving of fruit (2–3.5 servings), 0.5 serving of dairy products (1.5 servings), and 0.1 serving of nuts/seeds (1 serving) on average.³ In addition, children ate out of home an average of 1.7 times per day,³ and 35.8% of them consumed more than 1 cup of sugary beverages daily.³

The results of the 24-hour dietary recall reflected an imbalanced food consumption pattern causing the prevalence of unmet DRIs for dietary vitamin E, thiamin, riboflavin, calcium, iron, magnesium, and zinc in more than 30% of children.³ It represents a nutrition dilemma of double burden within the individual, family, and community.⁴ The prevalence rates of body mass index in normal, overweight/obese, and underweight ranges reported for schoolchildren

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in NAHSIT 2013–2016 were 63.7%, 28.4%, and 7.9%, respectively.³ The eastern region surveyed by NAHSIT 2013–2016 was located in an urban area; schoolchildren surveyed there had similar dietary and anthropometric status as the national average.³ In rural areas, the nutrition intake was worse than that in urban areas.³ On comparing geographical regions, it was found that the percentage of schoolchildren meeting the fruit recommendation was the lowest in mountain areas; schoolchildren in the eastern regions exhibited the lowest percentage of milk consumption.³

Nutrition problems of elementary schoolchildren (aged 7–12 years, first to sixth grade) in remote areas need attention. Remote areas have fewer resources, such as transportation, cultural stimulation, living functions, digital environment, and operate under poorer socioeconomic conditions.⁵ Job scarcity in rural areas forces many young parents, mostly men, to out-migrate to search for employment in cities that offer more job opportunities and/or higher wages. Located in eastern Taiwan, Hualien was specifically selected for this study because it is a rural area with mountainous terrain in which people have lower income (approximately 57% of the average in the national capital, Taipei), fewer job opportunities (82% of that in Taipei),⁶ as well as significantly lower food expenses than the national average (approximately 75.5%).⁶ According to the 2018 Household Income and Expenditure Survey Report,⁶ people in Hualien have only half of the food expenses as most residents in Taipei.

Many elementary schoolchildren in Hualien are raised by their grandparents when their parents out-migrate to cities for better employment. As a result, it is unavoidable that, in the remote areas under study, many children are left in the hometown to be raised by grandparents.⁷ Because of the limited availability of health professionals in remote areas, local school/public health nurses and dietitians assume the responsibility and serve as the key persons to support families in nutrition and health promotion.

Individuals' dietary habits are shaped by multilayered and intersecting factors in their environments, including individual factors (eg, demographics, preference, knowledge, and attitude), setting (eg, homes, schools, food services), sectors (eg, health care, food industries, media), and sociocultural norms and values (eg, belief system, tradition).⁸ Dietary habits of children are formed in early childhood, mostly at home and in school.^{8,9} From an early age, children observe and acquire parental preferences of food, dietary behavior, nutrition concepts/knowledge, and food parenting^{10–13} through daily interactions with their caregivers. Parents' child feeding practices are important in developing children's nutrition status and dietary habits.¹⁰ Parental food choices are influenced by contextual factors, such as food accessibility in the community, family tradition about food, and financial ability to purchase higher-priced food.¹⁴ In addition to parental sources, children learn dietary knowledge or habits from school education.⁹

The Social Cognitive Theory (SCT) asserts that the environment shapes people with cognitive structure (such as belief and expectation), whereas cognition in reciprocal determines people's behavior, resulting in changes in their environment. During this process, cognition, behaviors, and environment affect each other reciprocally.^{15,16} If the environmental feedback is beneficial, then the behavior is likely to repeat. If not, then a change in cognition and behavior is expected.^{15,16} Therefore, reciprocal determinism (RD), the central concept of SCT, could serve as the theory base for studying and resolving the difficulties encountered by caregivers (parents or grandparents) in establishing healthy eating behaviors of schoolchildren living in remote areas.^{16,17}

Studies have reported the important roles that family food consumption and food parenting behavior play in improving children's nutrition.^{18–20} Because the food consumption pattern and micronutrient intake were shown as imbalanced and inadequate,

especially in rural mountain areas of Taiwan,³ these findings prioritize the need to explore food provisions for children and determine the underlying factors related to the dietary practices in remote areas.

There are very few studies focusing on the dietary conditions of children at home and food parenting in remote areas. When children are school-aged, they leave home, attend school, and gradually become independent. However, parents still have a substantial influence on children's health-related decisions, including eating behaviors, lifestyle, and environment.^{21,22} Gunther et al²² used food choices of early adolescents during independent eating occasions as an indicator of self-efficacy for eating behavior and reported how good food parenting practices (FPPs) (ie, parents setting rules and expectations as well as managing availability or accessibility of healthy food for children) facilitates the healthy eating behaviors of children. Few studies have investigated the influence of grandparent involvement as secondary caregivers on health outcomes of children, and have shown mainly negative outcomes.²³ Of note, many grandparents took the responsibility of parenting their grandchildren as primary caregivers in remote areas.

Because the FPPs of parents or grandparents are the results of interactions among their knowledge, concept, and social context, researching intergenerational discrepancy on food parenting and child eating behaviors is important for future strategic planning by local public health-related professionals in order to improve the nutrition and health status of schoolchildren. The first aim of this study was to assess the eating behaviors of schoolchildren in the studied remote area by comparing the meals and food groups provided at home by their parents vs grandparents. The second aim was to explore the relating factors in FPPs that affect eating behaviors in families with elementary schoolchildren in a remote area of Hualien, Taiwan. Strategies for developing parental advice and nutrition education programs could be formulated on the basis of the results.

METHODS

Study Design

A qualitative study was conducted in Hualien, Taiwan, using in-depth interviews with a semistructured interview guide developed on the basis of the SCT.^{15,16} Participants in this study were primary caregivers, including parents and, because of the prevalent out-migration situation, grandparents. Remote elementary schools⁵ in Fenglin and Yuli Townships were approached, and 4 schools agreed to participate in this study. This study was approved by the Institutional Review Board of Fu Jen Catholic University (No. C103132).

Sampling, Participant Recruitment, and Eligibility

Primary caregivers, either parents or grandparents, who were in charge of elementary schoolchildren's meals at home and capable of sharing their experiences, were eligible for this study. Purposive sampling was used to recruit participants, with introductions made by school nurses or teachers. To obtain a sample with diverse characteristics, a similar number of parents and grandparents were recruited for each school. The total number of participants was determined, whereas no new themes and

subthemes emerged from the concurrent data analysis.

Data Collection

The first author (L.C.W.), who has received training and performed qualitative research in her master's and doctoral studies, with the guidance of the other 2 authors (K.R.C. and F.L.Y.), conducted all the interviews. Having served as a nurse and dietitian in an elementary school in Hualien for over 2 decades, the first author (L.C.W.) could translate the study questions from the academic language to local social language. The second author (K.R.C.) is a public health scientist specializing in qualitative research method and an active educator.

Adhering to the SCT, the interview guide contained questions on the following aspects: environmental (eg, sources of food groups at home, including food availability and accessibility at home), behavioral (eg, children's eating behaviors, including meals, dairy products, snacks, and sugary beverages), cognitive and behavioral (eg, concepts and FPPs about children's nutrition, including nutrition knowledge and ways to instruct children), and cognitive and environmental (eg, expectations of nutrition education from schools) (Table 1). This guide was formulated

by all the authors and modified to address wording ambiguity after conducting a pilot interview with 9 parents of an elementary school not participating in the current study.

To obtain substantial details, all the caregivers were interviewed in their homes to encourage a comfortable exchange of information. Two illustration booklets showing the serving sizes of 6 food groups were used to estimate the food provision at home. Each interview was audiorecorded; the complete verbatim transcripts, supplemented by the field notes taken during the interview, allowed the researchers to analyze each case further afterward. A few father/mother or grandfather/grandmother pairs from the participating families attended the interview. The interviews lasted for 60–90 minutes for each family to ensure all the questions were answered. All their responses were recorded in the database. During data analysis and data coding, only those responses pertinent to the primary caregiver of the family were coded for analysis. The responses from each parent dyad or grandparent dyad were counted as from 1 family. Each participant signed an informed consent form before the interview and received 6 bars of soap as compensation for completing the interview.

Table 1. Interview Guide for Semistructured Interviews

Topics and Questions

Topic 1. Sources of food groups at home

- A. What are your sources of the 6 groups of food at home?
 - i. Grains
 - ii. Protein foods
 - iii. Vegetables
 - iv. Fruits
 - v. Oils/nuts/seeds
 - vi. Dairy products

Topic 2. Children's eating practices at home

- A. What do your children usually eat at home? (Please provide specific examples)
 - i. Breakfast, lunch, and dinner
 - ii. Dairy product
 - iii. Snacks
 - iv. Beverage

Topic 3. Concepts and teaching about children's nutrition

- A. What's your thoughts or ideas about food nutrition for children?
- B. How do you instruct your children about eating?

Topic 4. Expectation of nutritional education from schools

- A. Concerning children's nutrition, what kinds of help do you expect from school?

Constructs of Social Cognitive Theory

Environment factors

Behavior factors

Personal, environment factors
Cognitive, environment factors

Cognitive, environment factors

Data Analysis

Within 2 days of interview completion, each audio recording was converted into a verbatim transcript. This study used thematic analysis for data analysis. First, as the primary coder, the first author (L.C.W.) carefully compared recorded interview files and verbatim transcripts to ensure accuracy and to become familiarized with the data. Then, for each interview topic, the first author (L.C.W.) carefully reviewed the contents of the interviews, identified meaningful themes that arose fitting the study objectives, and categorized each piece of data into the relevant theme. During the process, the first author (L.C.W.) debriefed the temporary results to the other 2 authors (K. R.C. and F.L.Y.) every 2 weeks to clarify the association of the codes and the topics.²⁴ Ambiguous themes and relationships between themes were fully discussed among all 3 authors to pursue more robust themes and to minimize the potential for researcher bias. Analyses were performed for 3 cycles until no more new themes or subthemes came up, and all 3 authors agreed that data saturation had been achieved. Finally, data were categorized into 5 themes: (1) home meal provision and food sources (food availability/accessibility), (2) home eating behavior of children (outcome

of food parenting), (3) concept of caregivers regarding food and nutrition, (4) FPPs of caregivers at home, and (5) caregivers' expectation for help on food parenting from schools (teachers and health professionals). Responses of parents to the 5 themes were compared with those of grandparents.

RESULTS

Thirty caregivers, consisting of 16 parents and 14 grandparents from 23 families, participated in this study. The demographic characteristics of the interviewed participants are listed in Table 2. Each family had 1 or 2 children attending elementary school during the study period. The occupations of parents include businessmen (n = 6), laborers (n = 4), farmers (n = 3), and housekeepers (n = 2). Most of the grandparents interviewed were farmers (n = 10); 2 were grocery or breakfast shop owners, the remaining (n = 2) were in housekeeping.

Theme 1: Home Meal Provision and Food Sources

On school days, children received free lunch in school, and their families provided breakfast, dinner, and other snacks. School lunch provided fruit once per week; milk was

generally unavailable except from occasional donations. Vending sugary beverages in elementary and high school campuses have been banned in Taiwan.

A comparison of caregivers' responses regarding home meal provision and food sources are shown in Table 3. A high percentage of parents allowed their children to purchase breakfast from local breakfast stores, whereas more grandparents prepared breakfast for their grandchildren. Regardless of the breakfast location, the contents were predominantly pan-fried processed food made of flour. Few grandparents prepared traditional breakfast with rice, meat, and vegetables. Store-bought breakfasts were usually accompanied by a sugary drink (black tea, milk tea with nondairy creamer), resulting in parents enabling their children's consumption of sweet drinks almost every morning. Milk was seldom provided in such cases. Among the grandparents, only 1 allowed their grandchild to have a sweet drink in the morning; others provided milk, flavored milk, or soymilk as the beverages for breakfast.

Although most of the interviewed caregivers were organic rice farmers, the rice was grown mainly for sale, with only a small portion being saved for self-use. White rice was overwhelmingly preferred; only 1 parent blended some brown rice in her cooking. A few parents and many grandparents grew corn, taro, and pumpkin in their yards; these cereals, starchy fruits, and tubers were considered and used as vegetables in the meal preparation (further discussed in Theme 4). All the interviewed families provided protein-rich foods adequately; notably, fish was chosen less frequently, especially when grandparents were the primary caregivers.

I buy fish less often simply because we live far away from sea, and I am afraid the fish is not fresh enough. (Participant 4B: mother)

The majority of the interviewed families grew vegetables in their yards and purchased some from nearby traditional markets if needed. Although a few families also grew

Table 2. Demographic Characteristics of Participants (n = 30)

Characteristics	n
Relationship with the student (n = 30)	
Mother	12
Father	4
Grandmother	10
Grandfather	4
Occupation of parents (n = 16)	
Agriculture	3
Industry	4
Grocery store	4
Breakfast shop	1
Agriculture machinery	1
Government staff	1
Homemaker	2
Occupation of grandparents (n = 14)	
Agriculture	10
Grocery store	1
Breakfast shop	1
Homemaker	2

Table 3. Comparisons Between Caregiver Groups on the Provision of Meals, Snacks, and Beverages (n = 23)^a

Themes	Subthemes (Number of Comments) ^b	
	Parents (n = 13) ^a	Grandparents (n = 10) ^a
Meal Provision		
Breakfast (23)	Eat out (11): Fried dumplings, egg pancake, sandwiches, hamburger, hotdogs (11) Sugary beverage (400 mL) (9) Black tea, milk tea (with nondairy creamer) Flavored milk (1) Home prepared (2) Flavored milk (1) Fried dumplings, toast, egg pancake (1)	Eat out (4): Fried dumplings, toast, egg pancake (4) Sugary beverage (400 mL) (1) Black tea Home prepared (6) Egg on toast, egg pancake, fried dumplings Soymilk, milk, flavored milk (4) White rice, egg, pork, and vegetable (2)
Lunch and dinner (23)	Home prepared, full family meal (13)	Home prepared, full family meal (10)
Snacks (8)	Snacks (5) Daily (1): Chocolate (1) Occasionally (4) Bread or leftovers (1) Cracker (1) Pudding, yogurt, or fruit (1) Mung bean soup (1)	Snacks (3) Daily (3): Jam and bread (1) Leftovers (1) Corn (home-grown) (1)
Sugary beverage (14)	Sugary beverage (8) Daily (1): Black tea Occasionally (7) Black tea, milk tea (with nondairy creamer), sports drink	Sugary beverage (8) Daily (2) Occasionally (6) Black tea, milk tea (with nondairy creamer), sports drink

^aNumber of households interviewed; ^bEach number in parentheses indicates the count of interviewed households that responded.

fruit, the provision of fruit was only available in the production season, and many families never served fruit either because the fruit is more expensive or they considered fruit a part of the ceremonial offering in ancestor worship (further discussed in Theme 4).

"We were not able to buy expensive fruits. We can't afford them." (Participant 3D: grandfather).

"It depends on whether there is a ceremony. If yes, then we have fruits that day." (Participant 2A: grandmother).

Dairy products, nuts, and seeds are good sources of protein, vitamins, and minerals. The average consumption of these products by schoolchildren nationwide was far lower than the recommendations.⁷ The provision of dairy and nuts/seeds seemed low in the studied families and were seldom considered choices for snacks. Compared with grandparents, parents were more likely to provide various selections of dairy products for children.

Grandparents may not consider milk to be a necessary food for schoolchildren.

"She hasn't drunk milk since she turned four." (Participant 1C: grandmother)

We rarely serve nuts and seeds in our family except during Chinese Lunar New Year. I don't buy nuts and seeds on regular days, even if you asked me to. (Participant 4A: mother)

"I bought sunflower seeds because my children and their mother liked them." (Participant 4E: father).

Likely because of the limited presence of grocery and convenience stores in rural communities, schoolchildren consumed snacks less frequently when nutrient-dense snacks were seldom available. On top of the frequent sugary beverages served with breakfast by parent caregivers, most families interviewed allowed sweet beverages daily or frequently during family time.

Theme 2: Home Eating Behavior of Children

Because the studied remote area consists mainly of rice fields with very few family-run grocery stores, convenience stores, and no restaurants, all the interviewed families served lunch (weekend) and dinner (daily) at home. Both parents and grandparents cherished the opportunities and prepared nutritious meals for their children; children usually accepted whatever was served at home.

"He ate whatever I cooked." (Participant 1A: mother).

"I prepare nutritious meals." (Participant 4A: mother).

"Broccoli and cabbage are their favorite vegetables. We usually have two vegetable dishes." (Participant 2A: grandmother).

"He ate whatever we cooked. We cooked easy-to-digest food, not in a greasy way." (Participant 2C: grandmother).

Compared with grandparents, parents exercised looser control over the children's consumption of snacks and sugary beverages at breakfast, but they offered various choices of snacks, both healthy and unhealthy. The majority of the caregivers allowed children to drink sugary beverages during the day; grandparents intended to exercise control, but sometimes had difficulty rejecting the grandchildren's request because of peer pressure at school.

"I bought some chocolate and put them in the refrigerator. I told my kids to eat only two or three pieces a day." (Participant 1B: mother)

He doesn't eat candies. Is that because he does not like them or we seldom gave them to him? I'm not so sure. (Participant 2A: grandmother)

"We don't have sugary drinks at home, and I don't allow him to buy them." (Participant 2D: grandmother)

We occasionally drank black tea or milk tea. How to explain that? Everybody is doing so in the neighborhood. So, I bought him sweetened drinks. (Participant 2A: grandmother)

"He spent all his allowance on sweet beverages." (Participant 1E: grandmother)

Theme 3: Concept of Caregivers Regarding Food and Nutrition

The major subthemes related to concepts of caregivers about food and nutrition are tabulated in Table 4 in order to compare the similarities and discrepancies between parents and grandparents. Both parents and grandparents thought they needed to provide plenty of food to satiate the appetite and stomach of children, so children would have the energy to perform schoolwork. However, they did not comprehend the importance of providing all 6 groups of food nor had they any idea about the recommended servings. They had the basic concept that natural, unprocessed foods were better than processed food, beverages or snacks with additives and coloring, and food deep-fried in repeatedly used oil. However, the majority of the caregivers did not

realize that some of their concepts were incorrect. For example, they considered sports drinks to be healthy and corn, pumpkin, and taro to be vegetables. Some parents thought bubble milk tea was unhealthy, whereas sweetened black tea or milk tea at breakfast was fine for children. One grandmother prohibited unhealthy sweet beverages but mistakenly treated milk the same because it is excessively nutritious.

In addition to family traditions and information from friends, parents could gather more information from media such as the Internet. These phenomena reveal that many caregivers without professional training can benefit from fundamental education to clear up their misconceptions about nutrition and food science.

Theme 4: FPPs of Caregivers at Home

The major subthemes related to FPPs of caregivers are tabulated in Table 5 to compare the similarities and discrepancies between parents and grandparents. Because the environment of the studied remote area fostered opportunities for daily family meals, it was easy for parents and grandparents to maintain the meal routines, provide nutritious meals with local vegetables, and serve as role models for their children. One grandmother even forbade her grandchildren from eating in front of the television so that they would concentrate on enjoying the meals.

Caregivers in this study showed various styles of FPPs. Most of the parents and grandparents set rules and expectations about the food their children ate. Parents tended to require children to eat a certain quantity of food, whereas grandparents tended to encourage grandchildren with their understanding of healthy eating. Some of the parents pressured their children to finish certain food, such as vegetables. One parent used sweet beverages to reward the good behavior of children. Pressuring to eat or bribing did not occur in grandparents. One mother considered cooking for one's self to be a required skill for independence; thus, she encouraged her

elementary-aged child to learn to cook while young.

The food parenting practice of some parents and a grandparent was categorized as in the style of indulgence. They prepared meals to satisfy or meet the preference for the food of children. Although parents or grandparents tried hard on meal preparation, the picky eating behavior of children caused some caregivers frustration and feelings of helplessness.

Theme 5: Caregivers' Expectation for Help Regarding Food Parenting From Schools

Because the elementary schools in remote areas function as the cultural and educational center, school staff members, both teaching and administrative, usually maintain a harmonious relationship with parents and grandparents. As shown in Table 5, some parents or grandparents observed some positive behavioral changes to their children (eg, drinking water or milk and bringing home useful messages). Thus, they expected schools to provide further health promotion concepts for families to follow. Parents of picky eaters and grandparents frustrated with meal preparation expected schools to provide education on a balanced diet.

DISCUSSION

The underlying dietary factors contributing to the insufficient micronutrient status of schoolchildren in remote areas of Taiwan are not clear. The first aim of this qualitative study was to explore the meal provision and food accessibility and the related factors by interviewing primary caregivers of schoolchildren in the remote area of Hualien, Taiwan. Because of the geographic and social demographic environment limited the number of local restaurants or food stores, families had more chances to eat meals at home. Compared with NAHSIT 2013–2016,³ children in the studied remote area had fewer opportunities for dining out and had more vegetables provided in their daily meals. Interviewed families seemed to provide adequate servings of vegetables and protein food but inadequate servings of whole grains,

Table 4. Comparisons Between Parents and Grandparents on Food/Nutrition Concepts With Representative Quotations (n = 23)^a**Theme 3: Concept of caregivers regarding food and nutrition**

Subthemes	Parents (n = 13) ^a	Grandparents (n = 10) ^a
Concept/knowledge		
Satisfy child's appetite (13/10) ^b	<i>Feeding kids till they are full</i> (1A: mother)	<i>He cannot stand feeling hungry, you know, kids would yell when they feel hungry.</i> (2D: grandmother)
Natural food (13/10) ^b	<i>Just eat natural food, not those processed food.</i> (2E: father) <i>Her mother said to give her fresh food only.</i> (2B: grandmother)	<i>Those canned foods! I would rather not let kids have them.</i> (2D: grandmother)
Ambiguous (13/10) ^b	<i>I seldom gave them bubble milk tea. If they asked, I only gave them milk tea or black tea. That's all.</i> (2E: father)	<i>Just let him eat what he likes. I don't know how to eat right either.</i> (2A: grandmother) <i>He didn't drink black tea or milk; just a little soymilk. He's already obese; it's better not to serve him food too nutritious.</i> (2C: grandmother)
Unhealthy food (8/6) ^b	<i>Try to avoid something like fruit drinks; their flavor was all made up after all.</i> (2E: father) <i>Don't eat those foods with colorings.</i> (4A: mother)	<i>Which of the fruit juice is from real fruit? None! They are all made with chemicals. I never drank them.</i> (3D: grandfather) <i>I fried with fresh oil and that is much healthier than the chicken drumsticks in market; those were fried with same pot of oil over and over.</i> (2B: grandmother)
Sources of information or knowledge		
Parents (13/10) ^b	<i>We were taught by our elders that you must eat until full in order to have energy to work.</i> (1B: mother)	<i>We listened to our elders that drinking black tea after meal could clean your guts, and you would be less likely to get sick.</i> (3D: grandfather)
'Friends (13/10) ^b	<i>Heard from friends that children are less likely to catch cold when they eat chocolate. Probably due to its high calorie or something. So, I have been giving my kids chocolate since they were little.</i> (1B: mother)	<i>My friend showed me on computer that lard is good for body in many respects.</i> (3D: grandfather)
Educational background (13/0) ^b	<i>I studied food science. I prepare all kinds of healthy food for my children. I told them to eat less of those less nutritious foods.</i> (4E: father)	
Internet (8/0) ^b	<i>His brother was diagnosed with protein in urine in checkup. I looked it up on Internet and found it had something to do with sugary beverage consumption!</i> (4A: mother)	
Culture (1/1) ^b	<i>"No food picking" is our culture. Have you ever heard of the dish "9 Vegetables in a Soup"?</i> (1B: mother)	<i>Elderly told us that drink black tea after meal would cleanse your guts and less chance to get sick.</i> (3D: grandfather)

^aNumber of households interviewed; ^bNumber of comments: parents/grandparents.

fruits, dairy products, and nuts in their daily meals. Consumption of sweetened beverages during breakfast and leisure time and snacks of high-fat content may contribute to the low nutrient density of the overall diet.

Family is an important social institution in which children establish

their eating habits.²⁵ During family meal times when good quality diets were served, parent's role-modeled to promote the successful establishment of eating behavior for children.²⁵ Participants in both groups (parents and grandparents) in this study reported the efforts they made in providing

healthy full meals for weekend lunch and daily dinner. Those who were farmers grew vegetables and fruits, raised chickens, and collected eggs to supply the fresh and nutritious food their family needed and lowered family food expenses at the same time. Such behavior was likely to

Table 5. Comparisons Between Parents and Grandparents on Food Parenting Practices and Their Expectation With Representative Quotations (n = 23)^a

Subthemes	Parents (13) ^a	Grandparents (10) ^a
Theme 4: Food parenting practices of caregivers at home		
Meal routine		
Family meals and cook at home breakfast (2/6) ^b	<i>In addition to breakfast, lunch and dinner are cooked at home; everybody eats together.</i>	<i>All meals are cooked at home, and everyone eats together.</i>
Lunch/dinner (13/10) ^b	(1A: mother)	(4C: grandmother) <i>Family should eat meals together. I don't like kids eating meals in front of TV. If they did that, I summon them back.</i> (2D: grandmother)
Modeling		
Family eating healthy diet (13/10) ^b	<i>I have many kids. When he sees brothers and sisters eating, he would follow likewise. They influence each other.</i> (3A: mother)	<i>He eats whatever I cook, and I eat healthy food.</i> (2D: grandmother) <i>I don't buy unhealthy food, ... at home. I don't allow them to eat non-nutritious food.</i> (4F: grandmother)
Rules		
Set rules/expectation about food or beverage consumption (4/2) ^b	<i>I don't tell them exactly what to eat. For meals, I would tell them to eat everything served.</i> (3C: father) <i>They need to eat rice, meat, and vegetables. Everything! They are not allowed to eat too much meat or eat only food they like. Ask them to eat less of the non-nutritious food.</i> (4E: father)	<i>I told him to eat all the vegetables. He put vegetables into his bowl sometimes, then left with rice only.</i> (2A: grandmother)
Give children some control over what they eat on the basis of parents' concept (3/6) ^b	<i>At dinner their mom would tell them to finish a bowl of rice and enough of vegetables.</i> (3C: father)	<i>She ate 2 bowls of rice sometimes. I told her not to eat that much. If greens were not enough, I would urge her to eat more.</i> (4F: grandmother)
Pressure to eat		
Exerts pressure on child to eat (4/0) ^b	<i>Her mom would force her to eat meals. If she liked it, she eats. If not, any more requests make her tears come while eating.</i> (3E: grandmother) <i>I'll watch. ... If they did not touch vegetables, I will put them (veg) into their bowls. I am a little mean, so they would eat them all.</i> (3A: mother) <i>I did push her to eat. She just refused and left the meal on table. I don't know what to do!</i> (3B: mother)	<i>I ask her, more or less, to eat vegetables. But I don't push her to finish certain amount.</i> (2B: grandmother)
Indulgence		
Satisfy/meet children's preference (4/2) ^b	<i>I prepared breakfast. ... But he had no appetite. I knew nothing to deal with it. I worried that he attends school with empty stomach; I gave him money to buy breakfast.</i> (1A: mother)	<i>Most of the time I cooked breakfast, but he didn't eat at all. Twenty days out of a month he would not eat (breakfast) at all, only eat lunch in school.</i> (2D: grandmother)
Eat what he likes (3/1) ^b	<i>He is allowed to take whatever he likes in our store. We don't set limitation for him.</i> (3C: father, a grocery store owner)	<i>He's fussy for fried chicken, then I bought some drumstick for him. Sometimes braised. Deep-fried every 1-2 months.</i> (2B: grandmother)

(continued)

Table 5. (Continued)

Subthemes	Parents (13) ^a	Grandparents (10) ^a
Caregiver's helplessness (1/1) ^b	<i>I care about their health. They are picky eaters, so I don't set a lot of limitations on what they eat. (4A: mother)</i>	<i>I cooked breakfast but he didn't eat at all. 20 out of a month he would not eat at all, just lunch only. (2D: grandmother)</i>
Autonomy		
Threaten to take away or present as reward foods children highly desire (1/0) ^b	<i>When he behaves well (such as finishing homework), he gets a bottle of cola. (4D: mother)</i>	
Train children to be independent (1/0) ^b	<i>I told him: "you have no brother or sister; you have to learn cooking for yourself and become independent. . ." (1D: mother)</i>	
Theme 5: Caregivers' expectation for help from schools regarding food parenting		
Teaching about healthy eating habits (13/10) ^b	<i>I had no time to teach him about food, and I hope school would teach him to eat healthy. At least he eats one balanced meal (a day) in school. (4D: mother)</i> <i>The teacher said that kids who drink milk will grow taller. Now he makes a glass of milk from powdered milk before going to bed at night. (2E: father)</i>	<i>She doesn't like plain boiled water, only loves to drink beverage bought sugary beverage (from grocery stores). School should tell them not to drink sugary beverages. She doesn't follow the rules her parents or grandparents set; she only listens to her teachers. (3D: grandfather)</i> <i>Recently he started drinking water with breakfast because he is obese. His teacher asked him not to, and he obeyed. (2C: grandmother)</i> <i>If correct concepts are taught in school, we will follow them. (2C: grandmother)</i>

^aNumber of households interviewed; ^bNumber of comments: parents/grandparents.

encourage the healthy eating behavior of children in their families. Pearson et al²⁶ conducted a study on adolescents to examine their individual behavioral and home environmental factors and the relation with consumption of fruits, vegetables, and energy-dense snacks. Their results emphasized the importance of home accessibility and availability in the consumption of these foods.²⁶ Eck et al²⁷ reported children's expectations and advice to parents on helping them to build up healthy weight-related behavior. Children considered parents to have a key role in facilitating healthy eating for the family and expected parents to increase family meal frequency.²⁷ Therefore, if current barriers could be overcome, the families in the studied remote area have the potential to serve further the function of a

healthy eating environment for their children.

The second aim of this study was to explore in-depth the key relating factors of FPPs, food availability, accessibility, and meal provision by caregivers (parents vs grandparents). According to the RD of the SCT, the behavior of caregivers is the result of their self-efficacy, which is influenced by factors such as environment and cognition. Because of inconvenient transportation and prior food consumption patterns, the selection of breakfast, dairy, and nutrient-dense snack products were limited in the remote area. Parents often allowed children to obtain breakfast from the local shop; grandparents tended to cook meals or buy ready-made breakfast products for the family. Most of the breakfast products were pan-fried and made of

refined rice or flour. Although some parents and few grandparents provided dairy products or soymilk for kids, the majority of participants frequently chose to provide sweetened or flavored products. If eggs, dairy, or soymilk were not provided, the nutrient density of an average breakfast was poor and worsened by pairing with sugary beverages. Numerous studies support the importance of habitual consumption of breakfast in providing nutrition and preventing overweight and obesity in children and adolescents. Regular breakfast consumption could also be considered an indicator of healthy eating behavior.²⁸ Although most research on breakfast eating involved ready-to-eat-cereals as the content, a study by Fayet-Moore et al²⁹ showed breakfast-consuming Australian children had a higher percentage of normal

body weight, lower total fat intake, and high intake of calcium, folate, magnesium, iron, zinc, and dietary fiber compared with those who did not eat breakfast. Among breakfast-eaters, cereal consumers had better nutrient intakes of the micronutrients mentioned above and the percentage of normal body weight than noncereal consumers.²⁹

In analyzing the discrepancy in FPPs of parents vs grandparents, grandparents tended to take a permissive or indulgent approach, whereas parents displayed more cases of pressuring to eat or using treats and bribes. Vaughn et al²⁰ analyzed the fundamental constructs in FPPs and developed a content map showing that FPPs could be influenced by characteristics of family, parents, and children. Family characteristics consist of race/ethnicity, income, education, food security, culture, acculturation, and family structure. Parent characteristics include general parenting style, food parenting style, tone, intention, motivation, knowledge, attitudes, and weight.²⁰ Some of the challenges or barriers reported in the literature encountered by parents were also observed in this study; examples included parents feeling busy and strapped for time, economic considerations, children regularly asking for less healthy food, and persistent picky eaters.³⁰ The reason for parents taking the commanding approach and grandparents preferring indulgence is probably due to their lack of training in general parenting knowledge or skills. This speculation is based on the observation that both parents and grandparents reported feelings of frustration and helplessness in their experience of food parenting. Yee et al³¹ examined the influence of the food parenting style of parents on children's consumption of healthy or unhealthy food and reported that parental modeling effects had a significant association with both healthy and unhealthy food consumption at home.³¹ An active guidance/education style was positively associated with healthy food consumption; a restrictive guidance/rule-making style was negatively associated with unhealthy food consumption. With regard to the promotion of healthy

eating at home, the effective parenting style also changed with the children's age.³¹

The message of drinking water (Table 5; Theme 5, quote from 2E: father) and milk (Table 5; Theme 5, quote from 2C: grandmother) being brought home by children probably is an indication that the health and nutrition education programs in school enhanced the children's knowledge and self-efficacy, which may be reflected in their behavior changes. Such a change motivated the caregivers to acquire more knowledge, as their needs had not been fully met because of resource limitations in their geographical area. The community needed additional nutrition- and health-related professionals to collaborate with local teachers and nurses to empower caregivers with food nutrition knowledge and increase their effectiveness in general and food parenting. A qualitative study by Slusser et al³² conducted focus group interviews on parents with children from low-income families in the Los Angeles United School District. The parents of that study³² had limited budgets for purchasing healthy food and had difficulty supplying their children to eat a healthier diet instead of fast food.³² Those parents also expressed desires to attend nutrition programs in their children's school to learn proper cooking and healthy food selection. With limited resources for building nutrition literacy and the recognition of being the key persons in establishing the healthy eating behavior of children and family members, parents or grandparents probably became more motivated to pursue learning opportunities to enhance their knowledge in health and nutrition as well as healthy diet preparation skills.

Grandparents participating in the current study were in their late adult to early elderly stage. Out-migration of young adults into urban areas forced the studied rural area to become an aged society (14.7% of the population was 65 years and older) more rapidly than the national average (13.2% at the time of research).³³ Regardless of the aging trends, grandparenting may become a necessary arrangement for the

sound future of the local families. However, few studies have investigated the demographic and cultural contexts, needs in various aspects, experiences, and support for grandparents serving as the surrogate or secondary caregivers.³⁴⁻³⁶ Even though caring for children requires greater physical, mental or emotional demands on their part, grandparents with accumulated life and parenting/food experiences demonstrated positive impacts on helping children to improve eating behavior²³ as we observed in the current study. Both grandparents and parents had unique features in FPPs. It requires skillful integration of the talent of caregivers with professional assistance to provide nutrition and food knowledge that empowers the caregivers and enhances their parenting skills to ultimately create strategies that shape healthy eating behaviors in schoolchildren in remote areas.

Some limitations exist in this study. Although illustration booklets of food serving sizes were used during interviews, and the data may generally profile the food provision at the home of schoolchildren, it cannot be interpreted as a result of quantitative data collected by tools such as food frequency questionnaires or dietary records. Because of the small population size and inconvenient transportation in the studied remote area, interviewed caregivers may represent families of better socioeconomic conditions within the local community; thus, the generalization of study findings needs to perform with caution. Because there are many remote regions other than the studied area, the implications of the study on future nutrition education interventions may require some adjustment for the respective local culture. Nevertheless, the strategies of collaboration among health-related professionals, schoolteachers, and caregivers could be feasible for most urban localities.

IMPLICATIONS FOR RESEARCH AND PRACTICE

Because nutrient-fortified breakfast cereals are expensive and less available in Taiwan, especially in remote

areas, the studies suggest that while recognizing breakfast as important, caregivers must also consider the quality of the ingredient selection in meal preparation tasks. The breakfast provided with sugary beverages for children in remote areas would expose children to the risk of micro-nutrient intake insufficiency.

Evidently, unfamiliarity with general parenting is a barrier found in this study. Therefore, offering the caregivers in this study, some training in general parenting knowledge and skills may allow them more consistency or flexibility needed for FPPs.

With the understanding of the strength and barriers of FPPs for caregivers, the results of this study could be used for designing integrated educational programs for caregivers to empower them through nutrition and general parenting literacy by combining the strengths of parents and grandparents, the evidence-based knowledge, and skills from health-related professions, as well as support from schools and the community in remote areas. Future research focusing on the effect of such programs adjusted with respect to local culture on healthy eating behavior of children is recommended for rural areas.

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Call for Papers for JNEB's Social Determinants of Health Themed Issue

Submissions due by April 15, 2021

As JNEB content reflects the diverse interests in nutrition and physical activity related to public health, among other topics, this upcoming themed issue will address the social determinants of health (SDH) in relation to nutrition and physical activity. According to the World Health Organization, the SDH include economic concerns and issues, education, social and community contexts, health care, and the built environment. With this call for papers for a themed issue related to the SDH, manuscripts may be considered as Research Articles, Research Briefs, Reports, Perspectives, Systematic Reviews, Research Methods, and GEMs. Research articles may include an intervention or be cross-sectional. Examples of papers that would fall with this topic include:

Determinants of Diet Quality in Pregnancy: Sociodemographic, Pregnancy-specific, and Food Environment Influences. Danielle M. Nash, Jason A. Gilliland, Susan E. Evers, Piotr Wilk, M. Karen Campbell. *J Nutr Educ Behav*. 2013;45:627–634.

Location of Food Stores Near Schools Does Not Predict the Weight Status of Maine High School Students. David E. Harris, Janet Whatley Blum, Matthew Bampton, Liam M. O'Brien, Christina M. Beaudoin, Michele Polacsek, Karen A. O'Rourke. *J Nutr Educ Behav*. 2011;43:274–278.

Reported Influences on Restaurant-Type Food Selection Decision Making in a Grocery Store Chain. Jessica Lynne Bachman, Danielle Arigo. *J Nutr Educ Behav*. 2018;50:555–563.

Chinese American Family Food Systems: Impact of Western Influences. Nan Lv, J. Lynne Brown. *J Nutr Educ Behav*. 2010;42:106–114.

Psychosocial Determinants of Food Purchasing and Preparation in American Indian Households. Joel Gittelsohn, Jean A. Anliker, Sangita Sharma, Amy E. Vastine, Benjamin Caballero, Becky Ethelbah. *J Nutr Educ Behav*. 2006;38:163–168.